PHOTOSHOP UNSHARP MASKING (USM) TIPS

By Jim Rich

UNSHARP MASKING (USM) BASICS

Applying sharpness can be done at various stages of the scanning or image reproduction process and is usually necessary after capturing an image with a scanner or a digital camera. This adds back sharpness lost during the original capture process. It is best to apply USM to the image at its final size it is going to be reproduced at.

One print-oriented sharpening strategy is to apply USM as one of the last adjustments. This will add back the sharpness that was lost as a result of the input scanning or image-capture process. To do this, use the Unsharp Mask filter option. Don't let its name fool you. Of all the sharpening features available in Photoshop, the Unsharp Mask is the most controllable sharpening feature and is modeled after high-end scanner tools. Some scanners can sharpen on input. Test your scanner using various settings to determine if it produces acceptable results.

Another important image sharpening strategy is to sharpen the image twice. The reason to sharpen an image twice is based on using the same image for a different output process (this strategy allow you to re-purpose the same image).

An example of this is using the same RGB image for print and for the Web. A small amount of sharpness is applied after the image is scanned. After the final output process is defined, one set of USM values are applied to the image headed to print and another set of USM values are applied for the image going to the Web.

Determining the correct amount of sharpness is a subjective decision. If the effect is taken so far that it creates distinct white or black lines in the contrast transition areas of an image, you have over sharpened. Note that the amount of sharpness shown on screen is often softened by the actual printing process, so experiment with various settings and use a 100% view in Photoshop for the most accurate viewing.

APPLYING USM TO AN IMAGE IN PHOTOSHOP

1. With the correct image window active, select Filter/Sharpen/Unsharp Mask from the menu bar.
2. Enter: Amount: 150%; Radius: 1 pixel; Threshold: 3.
   Use these values as a starting point for raw scanned images headed to the printing process. Images going to the internet will require a smaller Amount %.
3. To toggle between the before and after effect of the sharpening, use the Edit: Undo/Redo command.

Image after Highlight, Shadows, and Midtones are adjusted. No USM.

Detail of USM 100, 1, 0

Detail of USM 150, 1, 0

Detail of USM 200, 1, 0

Detail of USM 200, 2, 0

Image after USM
Amount: 100, Radius: 1, Threshold: 0

Image after USM
Amount: 150, Radius: 1, Threshold: 0

Image after USM
Amount: 200, Radius: 1, Threshold: 0

Image after USM
Amount: 200, Radius: 2, Threshold: 0

SHARPENING AND MOIRÉS PATTERNS

Moirés are patterns or "artifacts" that come from rescanning already screened halftone images. Visually a moiré causes noticeable unwanted patterns in the reproduction. Moirés are caused by the overlap of the dot pattern of the original image and the pattern imposed on the image when it is scanned. The best way to view a moire pattern in Photoshop is to be sure the view is at 100%. Moirés should be corrected before applying any sharpening effects. Some scanners have moiré correction as an option. For scanners that do not, try the techniques below.

Base Scan tips

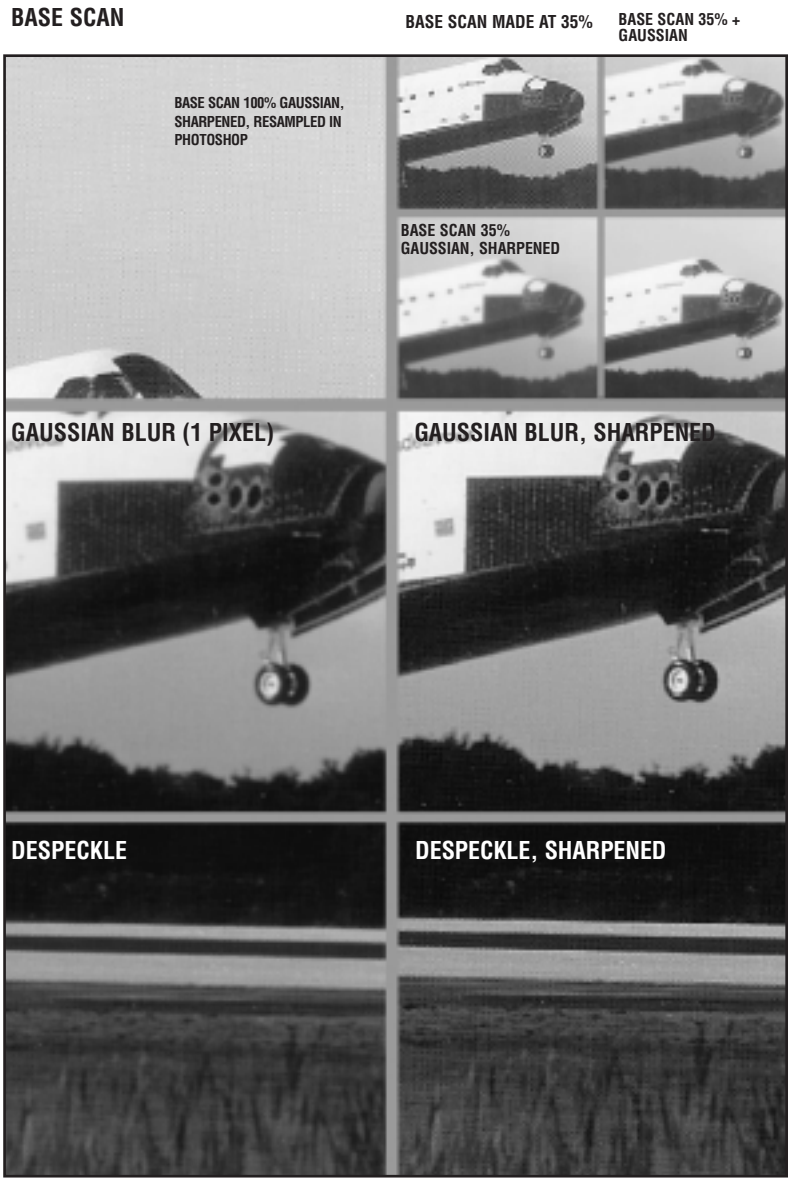
When trying to remove a moiré in an image that will be used at a reduced size i.e., 35%, you will achieve better results if you scan the already screened image at 100% of size, or at 2-3 times the usual resolution. Fix the moiré with one of the techniques below. Then, use Photoshop to resample the image down to the final size.

Gaussian Blur

The Gaussian Blur filter can be applied to an image in varying degrees from 0.1-100 pixels in strength. A good starting value is 1 pixel. The filter can be applied to the entire image or a mask can be used to apply the effect to only the portion of the image that is most affected by the moiré. Because this effect blurs the image, USM should be used to bring back sharpness.

Despeckle

This technique can be applied alone or in combination with Gaussian Blur. There are no settings for this filter and it does not always sharpen well. While checking the monitor is a good way to evaluate your success, remember to produce film and proofs to confirm your results.



LETTING THE SCANNER SHARPEN?

An often asked question is, "Should I let my scanner and scanner software make image adjustments or should I do them in Adobe Photoshop?" If you are not going to re-purpose the image and if you understand how your scanner is performing adjustments such as sharpness and you are satisfied by its performance, by all means, let the scanner do the adjustments.

In a production environment, the less user intervention, the better. It is more likely, however, that you will want to use Photoshop an do not use the scanners sharpening method at first until you fully understand how the adjustments work. You will then be able to use that experience to evaluate how well the scanner's automatic adjustments are working and you will understand how to change them manually, if necessary.